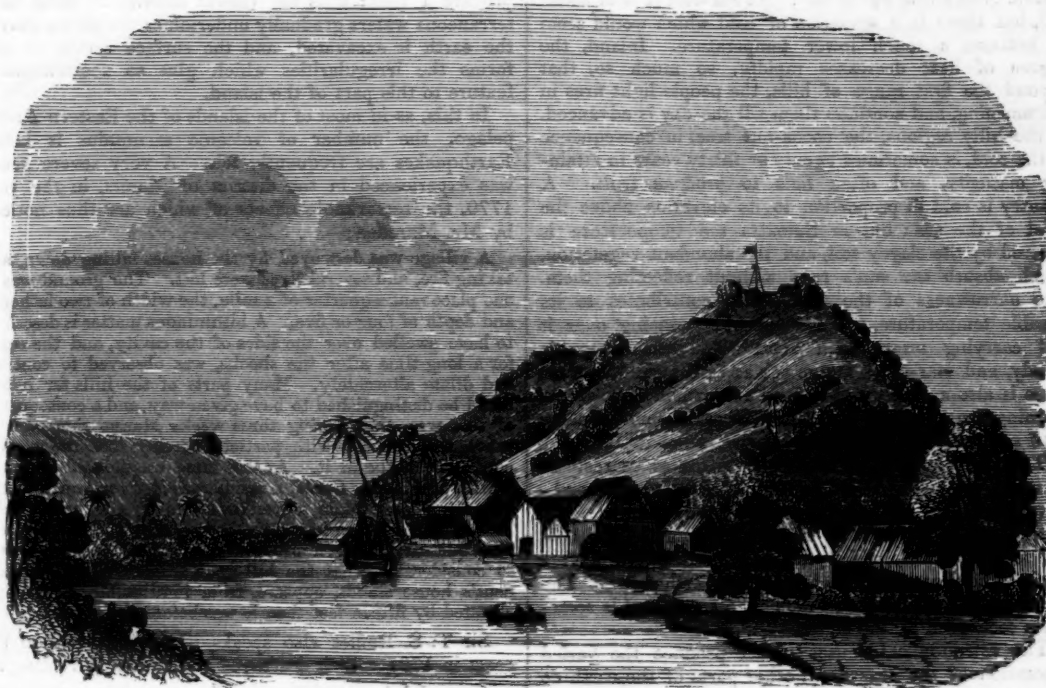




SUMATRAN SKETCHES.



PADANG HILL, AT THE MOUTH OF THE PADANG RIVER.

I.

GENERAL SKETCH OF THE ISLAND.

In contrasting the two islands, Java and Sumatra, with which he was so intimately connected, Sir Stamford Raffles says:—

From the hand of God, Sumatra has perhaps received higher advantages and capabilities than Java, but no two countries form a more decided contrast in the use that has been made of them by man. While Sumatra remains in a great part covered with its primeval forests, and exhibiting but scattered traces of human industry, Java has become the granary and the garden of the East. In the former, we find man inactive, sullen, and partaking of the gloom of the forests; while in the latter, he is active and cheerful. They are considered to have sprung from the same general stock, and the Strait which separates them is not twenty miles across.

Without attempting to account for the difference thus pointed out by so competent an authority, we proceed at once to present a few sketches of the island of Sumatra, first referring the reader to a memoir of the life of Sir Stamford Raffles, contained in the *Saturday Magazine*, Vol. XX., pp. 188, 199, as also to a short series of *Javanese Sketches*, contained in the same volume, to which the present articles may be considered as an appropriate sequel.

The extensive island of Sumatra forms the western boundary of the Malayan Archipelago. It is divided by the equator obliquely into two nearly equal parts; and the island extends full 6° south of that line, and nearly as much to the north. The general direction of the island is nearly north-west and south-east; its length

exceeds 900 miles; its greatest width is about 210 miles. Its northern point extends into the Bay of Bengal; its south-west coast is exposed to the great Indian Ocean; the Straits of Sunda separate it from Java towards the south; the Eastern and China Seas separate it from Borneo and other islands; while on the north-east the Straits of Malacca are interposed between it and the Malay peninsula, to which it is supposed to have been anciently united.

The whole extent of Sumatra is traversed by mountains often in double or treble ranges, but generally situated nearest to the western coast. These mountains though lofty are not covered with snow during any part of the year. The highest mountain is Ophir, situated immediately under the equator; the elevation of its summit being calculated at 13,842 feet above the level of the sea, from which it is visible. The interval between the mountain ridges is occupied by extensive plains, where the air is cool, and the country more open than in other parts of the island where the hills and valleys are eternally shaded by woods. These plains are the best inhabited parts of the island. From them many beautiful lakes extend at intervals through the country, and greatly promote internal communication. Waterfalls and cascades are also common. On the north side of Mount Pugong is a remarkable waterfall, which descends perpendicularly from the steep cliff into the sea, and from which ships sometimes take in fresh water without being obliged to land their casks.

The western coast of the island is abundantly supplied with springs and rivers, but they are in general too small and rapid for the purpose of navigation. On the eastern

coast, in consequence of its greater distance from the mountains, the streams are larger, and more steady and equable in their flow. The constant action of the surf, however, often throws up at their mouths a sand-bank, which diverts the course of their waters, and forces them into a direction parallel with the shore, between the cliffs and the beach.

The temperature of the air near the sea-coast is not so great as might be expected in a country situated in the midst of the torrid zone. At the most sultry hour of the day, (about two in the afternoon) the thermometer seldom rises above 82° or 85°. At sun-rise it is at about 70°, but there is a sensation of cold which would seem to indicate a much lower temperature. Inland, the degree of heat decreases rapidly, so much so, that beyond the first range of hills, the people light fires in the morning, and continue them till the day is advanced. In the hilly regions, the cocoa-nut tree, in consequence of the cold, is sometimes twenty or thirty years in attaining maturity, and often fails to produce fruit. A country is cold in proportion to its elevation above the level of the sea; but in Sumatra the temperature is lowered by the clayey soil, and the abundant vegetation, which absorb the sun's rays without reflecting them. The narrowness of the island also contributes to its equable temperature, the sea breezes sweeping over it and carrying away much heat. The atmosphere is cloudy, and star-light nights are as rare as in England; there is also a dense well-defined fog which rises every morning among the distant hills, and does not disperse until about three hours after sun-rise.

Thunder-storms are so very frequent as scarcely to excite the attention of old residents. During the north-west monsoon, the explosions are very violent; the forked lightning darts in all directions, and the whole sky seems on fire, whilst the ground trembles with a motion like that produced by a slight earthquake. The waterspout is also common along the coast, and is sometimes seen even on the shore.

The astronomical causes which produce the varied succession of the seasons in other parts of the earth do not operate in the torrid zone. There the year is divided by its two seasons, the rainy and the dry. In India, to the north of the equator, the north-east monsoon generally prevails when the sun is in the southern hemisphere; and the south-western monsoon, when the sun is in the northern hemisphere; but in Sumatra the monsoons are modified by the direction of the land, the north-eastern monsoon being changed into a north-western; and the south-western into a south-eastern. The south-eastern monsoon continues to blow from about May to September: and the north-western from November to March. These winds commence and leave off gradually. In the months of April and May, October and November, when the monsoons do not prevail, the weather is uncertain, and sea and land breezes prevail. The north-west monsoon is generally accompanied by abundant rain.

The soil of the western side of Sumatra is generally a stiff reddish clay, covered with a layer of rich black mould. From this there springs a constant verdure of rank grass, brush-wood, or timber-trees, forming in those parts where it has not been disturbed by man, an imperious forest.

Along the western coast the country between the sea-shore and the foot of the mountains is intersected by numerous swamps, which sometimes form a continuous chain for many miles, till they discharge themselves into the sea, or some lake, or the fens which are common near the banks of the larger rivers. These swamps render the face of the country so uneven, that in few parts of the whole country of Bencoolen would it be possible to mark out a tolerably level space of 400 yards square. The hollows and swellings are for the most part smooth, and regularly sloping, sometimes present-

ing the appearance of an amphitheatre; and they are clothed with verdure from the summit to the edge of the swamp. Many of the swamps have no apparent outlet. Mr. Marsden attributes this irregularity of surface to the springs of water, which abound in this island. They derive their number, and an extraordinary portion of activity, from the lofty mountain ranges of the interior, which intercept the floating vapours. Formed into rain at such a height, the water acquires in its descent through the fissures or pores of these mountains, a considerable force, which exerts itself in every direction to procure a vent; thus the violent activity of these subterraneous waters gradually undermines the plains above; the earth is excavated, and the surface settles in and forms the irregularities which give so remarkable a feature to this part of the island.

In this, as in most of the islands of the Eastern Archipelago, the number of volcanic mountains is large. Earthquakes are frequently felt. A very severe shock was experienced in the district of Manna, in the year 1770, the remarkable effects of which are thus noticed by Mr. Marsden:

A village was destroyed by the houses falling down, and taking fire, and several lives were lost. The ground was in one place rent a quarter of a mile, the width of two fathoms, and depth of four or five. A bituminous matter is described to have swelled over the sides of the cavity, and the earth for a long time after the shocks, was observed to contract and dilate alternately. Many parts of the hills far inland could be distinguished to have given way, and a consequence of this was, that during three weeks Manna river was so much impregnated with particles of clay that the natives could not bathe in it. At this time was formed near the mouth of *Padang Guchi*, a neighbouring river, south of the former, a large plain, seven miles long, and half a mile broad; where there had been before only a narrow beach. The quantity of earth brought down on this occasion was so considerable, that the hill upon which the English resident's house stands, appears, from indubitable marks, less elevated by fifteen feet than it was before the event.

Sir T. S. Raffles also speaks of a shock felt on the coast in 1797, which destroyed the houses at Padang:

A vessel lying at anchor was thrown, by the sudden rise of the tide, upwards of three miles on shore.

In Sumatra, as in other tropical islands where the shore is flat or shelving, the coast is defended from the attacks of the ocean by a reef, or ledge of coral rock, on which the surfs expend their fury. Probably, nowhere is the surf more tremendous than on the south-west coast of this island. It is also very irregular in its force, seldom preserving for two days together the same degree of violence. The usual method of landing on this coast is in catamarans. There are, however, several headlands which do not project far into the sea, but afford good anchorage in this vicinity and comprise several good harbours. Tapanooly is so large and spacious, and has so many advantages, that it is scarcely surpassed by any harbour in the world. Many small islands are scattered over it, forming numerous smaller harbours or coves, where ships are sheltered from all winds. It is said that all the navies in the world might ride here with perfect security in all weathers.

The following narrative will, perhaps, convey a better idea of a portion of the mountainous region of the island, than any further general details. Some years ago Mr. Presgrave, resident of Manna, undertook a journey with the intention of visiting the volcano on the summit of Gunung Dempo, one of the highest mountains in the south-west of the island. The party consisted of Mr. Presgrave, Mr. Osborn, (whose object was the dissemination of the benefits of vaccination,) and four Buguese soldiers for the escort of the baggage, which was carried by twenty-five coolies, or porters. The first part of the journey was performed on horseback over beautiful plains, and then over plains of a fine black loam of considerable depth. On the fifth

day the party approached the great mountain, and began to wind round the east side of it. This mountain is considered by the natives as sacred; they conceive that the guardian genius of the country has his abode in it, and that the Deras and inferior deities have also their residence there.

Having obtained the services of one Panglimo, a sort of bandit or bravo, the only man in all Pasumah who would undertake the arduous task of conducting the party to the top of the mountain, this man engaged an Imam or priest, whom, from the sanctity of his character, Panglimo considered necessary to ensure success, as he would deprecate the wrath of the deities and render them favourable to the undertaking. This was to be accomplished by the sacrifice of a fowl and a short fast.

A lucky day having been announced by the Imam, the party set out early in the morning. At a small elevation from the foot of the mountain were seen many of the magnificent flowers (*Rafflesia Arnoldi*), discovered by Sir Stamford Raffles, and already noticed in the *Saturday Magazine*. The ascent was continued till night, when the party began to look out for a convenient spot to raise their huts. Hearing the rushing of water below, they descended a deep ravine, and soon arrived at the margin of the river Salangis, the banks of which are formed of a black sand, resembling, except in colour, that of the sea-beach. The water was precipitated with great impetuosity over an abrupt cataract, opposite to which they pitched their tents, but the rushing of the water caused a draught of air which pierced so keenly that they were obliged to move away. The smell of sulphur was also almost intolerable, and the water tasted so strongly of that mineral that it was nauseous.

Early the next morning they ascended from this singular spot, and proceeded through deep forests, in which no human traces were to be discovered. The only path was one that had been opened by the passage of elephants; the traces of these masters of the desert being visible in every direction. They passed through what is called by the natives, "the region of tigers;" the inhabitants imagining that there is a stream in these parts which, when passed over by a human being, possesses the virtue of transforming him to that ferocious animal, and on his return of restoring him to his original shape. No tigers were seen; but only the footsteps of the rhinoceros and the wild goat. The two guides as they proceeded cut notches in the trees, in order to serve as marks on their return. The ascent was tolerably regular; interrupted at intervals by abrupt acclivities of one hundred feet, "ladders of the mountain," as the natives call them; and having gained the top of these the ascent became less steep, and in some places almost subsided into a plain. Towards evening they found themselves beyond the deep wood. The tall and majestic trees of the forest seemed suddenly to have vanished, and those of a smaller and more sickly growth to have taken their place. The road became almost impassable on account of thorns and briers, which were so thickly interwoven as to present an almost insurmountable obstacle to further progress. The poor coolies could scarcely make way with their burdens; their bodies were wounded, and the clothes of all the party much torn. Their provisions were nearly exhausted, and there was but little more to eat than the fruits of the forest.

Having rested a little from the fatigues of the day, in vain we looked for the plains we had left yesterday morning; the face of the earth below was concealed from our sight; clouds and darkness rolled under our feet. We found ourselves above the summit of the surrounding mountains; and for the first time in our lives, heard the thunder roll beneath us. The heavens above frowned, as in anger at the presumption of man daring to enter these aerial abodes, and the roaring of the volcano at intervals impressed us with a kind of sacred awe, as if we had in reality

approached the habitation of celestial beings. These were the only forerunners of the deluge that was to follow. The gloomy spot in which we were doomed to pass the night, far surpassed the power of description. On the one side the steep acclivity of the mountain; on the other, a deep precipice; not a tree to afford us a covering or protection from the threatening storm, and scarcely a bit of dry wood to light a fire. In this situation we were enveloped in total darkness. The thunder grew louder, the lightning more vivid, while the volcano above us continued its frightful roarings. At length the storm burst upon us in all its fury; our light and fire were suddenly extinguished, and we were necessitated to eat in the dark a half-prepared meal. We then sat down to wait the holding up of the rain, but we soon lost all hope of a calm interval. The storm continued with unabated violence until near daylight. Fatigued by the arduous task of the day, and with little to eat, we would fain have relieved our troubles by sleep; but to sleep in our condition was certain death. Besides the rain which poured in at every part of our hut, the torrent which rushed down the mountain threatened to sweep us below. We wrapped ourselves up in blankets, but these were very soon soaked through; indeed we appeared to be sitting in the bed of a river, rather than on firm ground. The air was bitterly cold; our shivering people murmured loudly: we had never felt it so cold since we had left England. If we attempted to talk or laugh, our guide, the Imam, in a tremulous voice, begged we would be silent, and not provoke the already angry gods.

Towards morning the rain abated, and leaving the coolies in the hut with the baggage the rest of the party proceeded towards the summit. The ascent was steep, and the briers became thicker and more closely entwined together, so that it was impossible to pass through them, and their stems were so tough that it was almost impossible to cut a passage.

Instead, therefore, of attempting a passage through these obstacles, they mounted upon the thorns and walked upon the top. In an hour or two this obstacle was surmounted and they came to another almost as discouraging: they had to walk over trunks of trees that were thrown down and piled on each other, at the imminent hazard of slipping through, and thus of being buried alive, or else of breaking their bones.

During the whole time we did not once set our foot on firm ground, or see the soil over which we were walking, nor by putting our sticks through could we reach the bottom. The vegetation of ages appeared to be piled up here in a widely extended and confused mass; and we seemed to have approached the brink of general destruction and desolation. We found that we were on a ridge of the mountain; on each side of us was a precipice of immense depth. The ridge grew narrower at every step. The day was bright, and looking down, the country immediately subjected to our view was beyond imagination beautiful; extensive plains scattered over with smoking villages; pools of water reflecting the rays of the sun; to the north the Musi river, called by these people the Sea of Musi.

The path was now narrow and steep of ascent, bounded by deep precipices, the bottom of which the eye could not penetrate. On gaining the summit of this narrow ridge the party was greatly disappointed to find that they had taken the wrong path, so that they could not reach the crater without retracing their steps, and proceeding by another fatiguing route. Their provisions being exhausted they determined to return, although they had not attained the highest part of the mountain, for they were overtopped by Gunung Berapi; this was entirely bare, and might be 300 or 400 feet above the highest point attained by the party. There are in all three peaks of this great mountain, to which the natives give separate names, viz.: Gunung Dempo, Gunung Lumut, and Gunung Berapi. The last is the peak connected with the volcano.

EVERY great mind seeks to labour for eternity. All men are captivated by immediate advantages; great minds alone are excited by the prospect of distant good.—FREDERICK SCHILLER.

ON PLANT-LIKE ANIMALS.

I.

The water is calm and still below,
For the winds and waves are absent there,
And the sands are bright as the stars that glow
In the motionless fields of upper air:
And life, in rare and beautiful forms,
Is sporting amidst those bowers of stone,
And is safe, when the wrathful spirit of storm,
Has made the top of the waves his own.

The term *zoophyte* signifies *animated plants*, and is applied to a race that was long the subject of doubt and difficulty to naturalists, it being no easy task to decide whether it belonged to animals or plants. Zoophytes are indeed in many respects very much like vegetables; but as it has now been well ascertained that they belong to the animal kingdom, the name of "plant-like animals," given to them by some modern writers, is much more appropriate than that of "animated plants."

The lowest place in this curious race of beings is occupied by the various sorts of sponge, which exhibit a regular organization, and which, while remaining in their native situations beneath the waters of the ocean, are undoubtedly living animals. Next to the sponges, and with rather a firmer texture of body, are the different kinds of polypus, which form a very extensive order of zoophytes, abounding in every part of the ocean, but thriving best in the warmer parts of the globe. Some of these animals bear a very striking likeness to flowers, or trees, as will be seen by the following specimens.

Fig. 1, so much resembling a leafless tree, consists of tubes of a horny texture, gradually formed by the animals in the course of their growth, from the extremities of which the polypi issue forth. Fig. 2 gives a highly magnified representation of a portion of the same zoophyte. It has been truly said that in the construction of

Fig. 1.



Tubularia ramosa,
(natural appearance.)

Fig. 2.



A portion of *Tubularia ramosa*, highly magnified.

zoophytes, nature seems still to keep in view the models of vegetable forms, the characters of which, while effecting the transition from one kingdom to another, she continues to impress on her productions.

In examining a piece of sponge we are struck with the number of holes or orifices which penetrate it in every direction. The polypus differs from the sponge in having fewer of these orifices, and in their being larger and more tube-like. In the polypus represented above, the orifices are at the end of each tube, and round the margin of each is a fringe of hairs or filaments, which are highly useful to the animal, for they are capable of twining round any suitable object that comes within their reach, and of conveying it to the orifice or mouth of the tube, where it is received as food. Thus these curious little plant-like animals have an apparatus as admirably adapted to their peculiar wants, as that of the mightiest beasts of the earth. The trunk of the powerful elephant is not more flexible and well adapted to the

economy of the animal than these filaments or feelers are to the mode of existence of the humble polypus.

The feelers of the polypus, (called by naturalists *tentacula*;) differ in number and in length in the several species, and sometimes each of the mouths is provided with a double or triple row of them. We must also remark that each mouth or opening provided with feelers is generally regarded as a distinct animal, although attached to one common mass; thus fig. 2 represents at least three of these polypi. But the polypus may exist either separately and individually, or it may unite in small clusters, or it may form with immense numbers of its kind a large mass, having mutual organic connection. An instance of a detached polypus is given in fig. 3, where a single animal may be seen attached to the leaf of an



Hydra viridis,
attached to a weed.

an aquatic plant, while another has fixed itself on the stem. This species of polypus is of a fine clear green colour, and is found in dormant waters. Like the other kinds of *hydra* it is remarkable for the wonderful property of reproducing the parts taken from it. Simple as is the structure of the hydra, it can swim, crawl, or even walk, by fixing alternately the two extremities, after the manner of leeches or caterpillars. Thus in fig. 4, A shows the ordinary position of the hydra: B, the first step in its progressive motion; C the body drawn up, in order to a second step; D, the animal again stretched out, preparatory to taking it.



Mode of walking of the *Hydra viridis*.

As some of the species of hydra are to be found in all fresh waters, as well as in the sea, it may be worth while to look for them during summer, and to keep them in a vessel of water for the sake of studying their habits. If we take a certain quantity of water-lentils, gathered in dormant but pure water, we shall be nearly certain of finding plenty of hydras attached to them. If these lentils are put into water, and allowed to remain undisturbed, the hydras will begin to move their feelers, or tentacula. These curious creatures require to be fed with other small aquatic animals, and it is a very singular fact that the stomach is so constructed that if the animal be inverted or turned inside out, digestion goes on upon the surface now become internal, just as well as it did on the other side. The structure of the stomach and mode of nutrition in these animals will be further explained in our next article; but the fact just stated has been proved to a certainty by Trembley, who, in his curious experiments on these animals, turned some of them inside out, as he might the finger of a glove. The same philosopher found that the body of the hydra might be cut lengthwise or across, and according to the number of pieces into which it is cut, so many are the perfect animals produced by the process. Again, separate animals may unite and form a complex animal, having several heads, "thus realizing in nature the hydra of the fable."

Another family of polypi is distinguished by its inhabiting parallel tubes, which are united together at certain distances. These tubes are of a stony substance, and each contains a polypus. From the regular arrangement of these tubes in a manner resembling that of the pipes of an organ, the name of the species, fig. 5, is derived. It abounds in the Indian Archipelago. The

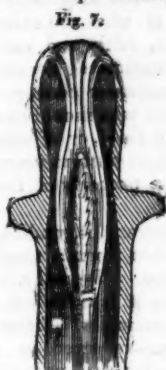
tubes are of a fine red; the animals inhabiting them are green, and have somewhat the form of the hydra.



Tubipora musica, natural size.

Tubipora musica, highly magnified.

In fig. 6 is shown the appearance of the tube when the animal keeps within its cell, and also when it spreads out its tentacula for food. Fig. 7



Highly magnified section of one of the cells of Tubipora musica.

exhibits one of the tubes still more highly magnified, and cut open to show its structure, and the appearance of the polypus reposing in its cell.

The tubes, though so intimately connected with the animals that reside in them, have no vitality of their own, but are deposited from time to time during the growth of the polypus.

Zoophytes which are permanently fixed to rocks or other substances are multiplied, in a great number of instances, by detaching small portions of their substance. These soft imperfect masses are called by naturalists *gemmae*, and may be likened to half-formed buds of a tree. These gemmae buoy themselves in the water, swimming in various directions, until they arrive at a favourable spot for their future growth. There they become fixed, and spread out so as to form a base for the superstructure, which finally appears in the particular form characteristic of the species. Portions which may be compared to the root and stem in plants, are always deposited before the formation of the various polypi.

Such are some of the peculiarities of this singular race of beings, though much patience and microscopic examination are requisite to ascertain anything correctly of such minute animals, and the field is so wide, that it will be long ere the efforts of naturalists shall have prevailed to give us a clear account of the numerous families of zoophytes.

GRIEF FOR THE DEAD.

The day goes by,
On which our soul's beloved dies! The day,
On which the body of the dead is stretched
By hands that deck'd it when alive; the day
On which the dead is shrouded; and the day
Of burial—one and all pass by! The grave
Grows green ere long; the churchyard seems a place
Of pleasant rest; and all the cottages,
That keep for ever sending funerals
Within its gates, look cheerful every one;
As if the dwellers therein never died,
And this earth slumbered in perpetual peace.
For every sort of suffering there is sleep
Provided by a gracious Providence,
Save that of sin. We must endure
The simple woe of knowing they are dead,
A soul-sick woe in which no comfort is,
And wish we were beside them in the dust!
That anguish fire cannot sustain itself;
But settles down into a grief that loves,
And finds relief in unrepented tears.
Then cometh sorrow like a Sabbath. Heaven
Sends resignation down, and faith; and last
Of all, there falls a kind oblivion
Over the going out of that sweet fight
In which we had our being.—JOHN WILSON.

EASY LESSONS ON REASONING.

LESSON XVI.

PART II.

§ 9. In most cases this distinction is very obvious; but it sometimes happens that a person is supposed, and supposes himself—to be attesting a *fact*, when in truth he is giving an *opinion*; that is, either stating the *inference* he draws from the fact he has witnessed; or again, professing to attest a fact which he has not really witnessed, but which he *concludes* to have taken place, from something he did witness.

An instance of the former kind, is, when some one who is in attendance on a sick person, bears witness that the patient was benefited, or was disordered, by taking such and such a medicine. He was an eyewitness perhaps, of the medicine's being swallowed, and of the subsequent change for the better or for the worse; but that the medicine *caused* that change, (tho' he may be very right in believing that it did) is evidently his *judgment*.

As an instance of the other kind, a man, suppose, will attest that he saw such one killed; tho' perhaps he did not see him dead; but saw him receive a wound which he *judged* (perhaps very rightly) could not fail to occasion speedy death.

For it is to be remembered that there may be, and often are, "questions-of-opinion" *relative to facts*; i.e., we judge from such and such circumstances, that so and so is, or is not *likely* to occur; or to exist. It is a *fact* that there is, or that there is not, a great lake in the interior of New-Holland; but till that interior shall have been explored, every-one is left to form his opinions, and to judge, according to probabilities.

And hence, it should also be remembered that men are apt to *reason unconsciously*; and thus to suppose themselves bearing testimony (as has been said) to something their senses have witnessed, when in truth they are stating their own inferences therefrom.

The process which usually takes place, is this: their senses furnish them with one *Premise*, (the *Minor*) the *other* is supplied by their own mind; and the *Conclusion* drawn from these two (as you may see in the above examples) is what they describe themselves as having witnessed.

§ 10. *illy*. The other remark to be borne in mind, is, that when several *independent* witnesses [witnesses between whom there could have been no *collusion*] attest the *same thing*, the weight of their testimony depends on this *agreement*, and not on the weight of each considered separately, or on the mere *addition* of these together.

Thus, if a stranger, or one on whose veracity I have no reliance, gives me intelligence of some remarkable transaction, or state of things, which he professes to have witnessed, describing fully all the details, I may perhaps think it more likely than not that the whole story and all the particulars, are a fabrication. But if I receive the *same* account from another, and again from another person, (equally undeserving of credit) who could not have had any communication with the first, nor could have had access to any source of false information common to them all, I should at once believe them; because the chances would be immeasurable against several persons (however likely, each, to invent a story) having, independently, invented the *same* story.

And the force of evidence in such an argument depends mainly on the number and minuteness of the *particulars* in the thing attested; because the chances are thus increased against an *accidental* coincidence.

The same rule applies not only to "Testimony" but to other "Signs" also. As when (to refer to an example in the preceding Lesson) a person after swallowing a certain drug is attacked with such and such symptoms; which may have been accidental; if the same symptoms follow in another case, and another, &c., we are convinced at length that these cannot have been accidental coincidences, but that the drug *caused* the symptoms.

§ 11. When we reason from a known case to another, or others, less known, under the same Class, this is called arguing from "Example"—by "Induction"—from "Experience"—by "Analogy"—by "Parity-of-reasoning," &c., all of which expressions, though not exactly synonymous, denote a process substantially the same. And the two cases,—the known, and the unknown,—are said to be "*analogous*," or "*parallel cases*;" the common Class which they both fall under, being, the point of Resemblance or Analogy between the two.

Thus, we shew from the example of the French Revolution, and that of England in the time of Charles the 1st, that the extreme of Democracy is likely to lead to a military Monarchy.

It is in this sense that we speak of "making an Example" of one who is punished for any fault; so as to deter others by the expectation that a like fault in them will lead to *their* punishment.

And it is thus that we learn to anticipate such and such weather, in certain situations, at certain seasons; and in short, become acquainted with the general *Laws of Nature*.

In all these cases we proceed, strictly speaking, by Analogy. But this word is most usually employed in those arguments where the correspondence between the two cases is not so complete as to warrant a *certainly* in our conclusions. When the two cases do correspond completely, or nearly so, we usually employ the word *Experience*.

Thus a man would be said to be convinced from "Experience" that such and such a kind of diet, or of medicine, or of weather, is wholesome or unwholesome to himself; if he had invariably observed like effects on a number of men, he might perhaps speak of Experience as having convinced him that this diet &c. was wholesome or unwholesome for the whole human Species; though in this, he would be more liable to mistake: but if he conjectured the same with respect to some other Species of animal, every one would say that he was reasoning by "Analogy."

§ 12. And here observe, that it is not strictly correct to speak of "Knowing by Experience" such and such a *general truth*; or that so and so *will take place* under such and such circumstances. Not but that we may often have the most complete and rational *assurance* of general truths, or future events; but, properly speaking, what we *know*, by "experience," is, the *past* only; and those *individual* events which we have actually experienced; and any conviction concerning a *general rule* and concerning *future* occurrences, is what we *judge*, from Experience.

And this distinction is important to be remembered, because, although (as we have said) there are numberless cases in which the conclusion thus drawn is not liable to mistake, many persons are apt—as was above remarked—to make mistakes as to *what* it is that they themselves,—or that others,—are, on each occasion, bearing witness to.

A mere fact, or a number of *individual* facts, however strange they may seem to us,—that are attested by a person whose veracity we can fully rely on, we are justified in believing, even tho' he be a man of no superior judgment. But if he states some *general fact* [or "law"] as a thing *experienced* by him, we should remember that this is his *inference*, from his experience. It may be a very correct one: and it may be one in which no great ability is needed, for forming a correct judgment; but still the case is one in which his *ability*, as well as *veracity*, is to be taken into account.

For instance, a Farmer or a Gardener will tell you that he "knows by experience" that such and such a crop succeeds best if sown in Autumn, and such a crop again, if sown in Spring. And in most instances they will be right: that is their Experience will have led them to right *conclusions*. But what they have actually

known by experience, is, the success or the failure of *certain individual* crops.

And it is remarkable that for many Ages all Farmers and Gardeners without exception were no less firmly convinced—and convinced of their knowing it by *experience*—that the crops would never turn out good unless the seed were sown *during the increase of the Moon*: a belief which is now completely exploded except in some remote and unenlightened districts.

§ 13. In all cases, Arguments of the Class we are now speaking of, proceed on the supposition (which is the Major-premise) that "what takes place,—or has happened—*or* which we are sure *would* happen—in a certain case, must happen, or take place in a certain other similar [or analogous] case; or in all such cases."

The degrees of probability of this Major-premise will of course be infinitely various, according to the subject-matter: In the investigation of what are called "physical-laws," a single experiment, fairly and carefully made, is often allowed to be conclusive; because we can often *ascertain all the circumstances* connected with the experiment. Thus, a Chemist who should have ascertained by trial, that a specimen of Gold, or of some other metal before him, would combine with mercury, would at once conclude this to be a property of that metal universally.

In human transactions on the contrary, it would be thought very rash to draw a conclusion from a single occurrence; or even from two or three. We make, in such cases, a *wide "Induction"* (as it is called) of a number of individual instances, [or "examples"] before we venture to conclude universally,—or even as a *general rule*—what is likely to be, for instance, the result of such and such a form of Government,—of the existence of Slavery,—of the diffusion of Education,—of Manufactories, &c.

§ 14. We have said that we sometimes argue not only from what has *actually* happened in certain cases, but also from what we feel certain *would* happen in such and such a *supposed* case. Of this description are instructive "*Fables*" [or "Parables," "Apologues," "Illustrations"] in which a general maxim [or "principle"] is inferred from a supposed case, *analogous* to that to which we mean to apply the maxim.

Thus, the imprudence of a man who should hastily join the disciples of Jesus, without having calculated the sacrifices required, and the fortitude expected of him, is illustrated by the supposed case of a man's beginning to build a house without computing the cost.

So also Socrates argued against the practice of some of the Greek Republics, who chose their Magistrates by *lot*, from the supposed case of mariners casting lots, *who* should have the management of the vessel, instead of chusing the best Seaman.

And Nathan's parable brought home to David a sense of the enormity of his own crime. Indeed, the "golden rule" of supposing yourself to change places with your neighbour, and reflecting what you would, then, think it right for him to do towards you, is merely an admonition to employ in one (very numerous) class of cases, such a mode of reasoning.

In every employment of what may be called ["fictitious," or] "invented-example," [reasoning from a supposed-case] the argument will manifestly have no weight, unless the result that is supposed in the imaginary case, be such as one would fully *anticipate*.

On the other hand, *real* instances have weight even tho' they be such as one would not have *expected*. For instance, that all animals with horns on the head, should chew the cud, is what no one would have originally *conjectured*: but extensive observation has so fully established this as a universal rule, that a naturalist, on finding a skeleton of some unknown animal with horns on the skull, would at once pronounce it a ruminant.

§ 15. When an Argument of the Class now before

us, [from Example, Analogy, &c.] is *opposed* by denial of one of the Premises it is usual, in ordinary discourse, to say, either, "the statement is *not correct*"—which is denying the *Minor*-premise,—or "this case does not *apply*," [or is "not in *point*"] or "does not *hold good* in reference to the one before us;" or "the cases are not *parallel*:" which amounts (as you will see on examination) to denying the *Major*-premise.

Thus, if any one recommends to this patient a certain medicine, as having been found serviceable in cases of Typhus, it might be either denied that it did prove serviceable in those cases, (which would be a denial of the *Minor*) or again it might be denied that this patient's disorder is the *same* as those; which would be a denial of the *Major*-premise.

And here observe, that two things may be very unlike in most respects, and yet quite alike—i. e. the Analogy may hold good—in the one point that is essential to the argument: or again, they may disagree in that one, tho' they are analogous in many other points.

And it is from inattention to this distinction that just arguments from Analogy are often rejected, and fallacious ones admitted.

§ 16. For instance, in the Parables alluded to above, if a man should object that "a lamb is a very *different thing* from a wife," and "a ship, from a Republic," the differences, every one would see, do not affect the Analogy in question.

On the other hand there is an Analogy in many respects between all "valuable-Articles" that Man uses; as Corn, and iron or lead, and again (what are called the precious-metals) gold and silver. And as an increased supply of *most* of these articles, while it lowered their *price*, would not diminish their *usefulness*, and would thus prove a general benefit, some might infer that this would hold good in respect of gold and silver.

If the earth should yield two bushels of corn, or two tons of iron or lead, for one that it now yields, these articles would be much cheaper, while a bushel of corn would be as useful in feeding us, as now: and so, with most other articles.

But if the supply of gold or silver were thus doubled, the chief *use* of these being for *coin*, and the *utility* of coin *depending on its value*, the only important change would be, that a sovereign or a shilling would be twice as large as now; and therefore twice as cumbrous. So that no advantage would result.

It is manifest that in a train of Reasoning, it will often happen that several of the different kinds of argument we have spoken of will be combined. Thus we may perhaps have to prove by several Examples, the existence of a certain "Cause;" and from that Cause to infer a certain "Effect;" and that effect again may be employed as a "Sign" to infer a certain "Condition," &c.

In this, and the preceding Lessons, several interesting subjects have been very slightly touched on, which may be found more fully treated of, and the views now taken more developed, in treatises on those several subjects.

If you proceed, in following up this course of study, to peruse such treatises, you will have been prepared, it is hoped, to find that perusal the easier and the more interesting, from what has been explained in these Lessons: and you will be the better able to understand what is valuable, in other Works on such subjects, and to detect anything that may be erroneous.

HE lives, who lives to God alone.
And all are dead beside;
For other source than God is none,
Whence life can be supplied.
To live to God is, to requite
His love, as best we may;
To make his precepts our delight,
His promises our stay.—COWPER.

BRAZILIAN SKETCHES.

I.

DOMESTIC MANNERS OF THE BRAZILIANS.

BRAZIL is a country which, if it belonged to some enterprising nation, might be made an earthly paradise, for the climate, with the exception of Rio de Janeiro, is excellent, the mineral wealth very great, and the soil capable of producing every cultivated fruit and flower.

The domestic manners and customs of the natives are but little known to foreigners, particularly the internal arrangements of their dwellings; for if the stranger be invited to pass a night under their roofs, he leaves the house the next morning with about as much knowledge of it as when he entered, not having been allowed to advance further into it than the *Sala*, or front room, where the host receives him with a few formal bows. Here he dines and sups alone, the master of the house standing by looking on, but not touching a morsel himself, as he is reserving his appetite for a private meal with his *Senhora Donna* in another room. The stranger having partaken of a meal consisting of hashed fowl stewed with garlic, rice boiled with rancid fat pork, and the never-failing *feijao* and *farinha* (black beans and pounded Indian corn), retires to the verandah to amuse himself, as the natives do, with *pensando seus pensamentos*, (literally, *thinking his thoughts*;) or, should he fortunately have a companion, they may discuss their next day's journey over a cup of excellent coffee, the best thing a Brazilian house affords. Between eight and nine o'clock a slave brings in a mattress stuffed with Indian corn leaves, and a pillow of chamomile flowers, which are deposited on the floor; she then fetches a large wooden bowl of hot water, and after pulling off the traveller's boots, she washes his feet, a most delicious thing after a long journey under a tropical sun.

During the evening the lady of the house may, perhaps, show herself for an instant, to get a peep at the foreigner. Many of these women would be handsome, had there been but a little care bestowed upon them when young; unfortunately their education is entirely neglected, and they grow up debased both in mind and body. Few of them can either read or write, and just at a time when they would begin to appreciate some little instruction, they are wedded to a man whom probably they have never seen, and, therefore, do not regard as the protector whom they are bound to love, honour, and obey. Their days are passed in the most idle manner; needlework, and every other household duty is left to their slaves, for they say that "it is useless to keep a dog and bark yourself." A favourite pastime for Brazilian ladies is to look out of a window and keep constantly spitting down on the pigs and fowls beneath, or if several of them are together, they amuse themselves by examining each other's heads, but certainly not for any phrenological investigation. Let the weather be what it may, they wrap themselves up in a sort of ordinary tartan cloak, which hides a multitude of sins. Their children run about naked until they are nearly four years old, when their poor little crooked legs and distorted stomachs are partly covered by a pelisse of thin blue baize. From very early marriages one frequently sees a woman, only thirty years of age, already a grandmother, and a great-grandmother before she is fifty; notwithstanding this, many of them live to a great age, and in some houses four or five generations may be seen hobnobbing it together in perfect harmony. Their families are seldom large, rarely exceeding four or five, although instances are known of some numbering twelve and upwards.

The *Senhor* passes his time much in the same manner as the *Senhora* does hers, viz., in doing next to nothing. If he have land to cultivate he occasionally rides to see how his slaves are going on, but, altogether, he is fonder of the home than of the out-door department; here he can enjoy his *dolce far niente*, and loiter for hours together

over the verandah, occasionally smoking a cigarrito of his own manufacture. Once every six or seven weeks, he attends mass at the nearest chapel, and on these occasions he is decorated with all the valuables he possesses, such as gold chains, silver-handled knife, silver-mounted pistols, massive silver spurs, and, for fear they should be stolen from his steed while he is performing his devotions, he holds in his hand his silver bit and stirrups. If the chapel be some distance from his house, he comes armed to the teeth, having, besides his knife and pistols, a Toledo sword and long Spanish fowling-piece—truly a formidable figure to enter a house of worship; but such cowards are these people, that unless they arm themselves like a travelling battery, they never consider themselves safe, although, at the same time, there is no fear of attack, one being too much afraid of the other. It is only when they quarrel over their cups, or from jealousy, that the knife is brought into play, and then they resemble their own wild tiger cats much more than human beings. We have travelled several thousand miles in that country, and although frequently alone and benighted, were never once molested; we fear so much could not be said of some of our more northern climates. If even the native were to go unarmed, his very look would generally deter any one from meddling with him; his long jet black hair hanging loose over his thick neck and scowling face, which knows the advantage of a razor only when its owner visits his chapel.

Although we saw several Brazilians whom we called handsome, we could not deny to ourselves that their beauty had too much of the bandit in it to be pleasing. Their eyes are good, but the sneering nose and low-drawn mouth show the real character of the man. As a general rule we may call the Brazilians temperate as respects eating and drinking, but when they once commence, nothing will induce them to leave off as long as a drop of spirit is to be obtained, and when in a state of intoxication their rage and violence are unbounded; fortunately for themselves they are too poor to indulge often in these bouts. The upper classes are much addicted to gambling, but we had not the curiosity to inquire into their games; the dice-box we saw in constant use, and the practice of *leading* the die on one side is frequently resorted to by them. As masters to their slaves they are both severe and mean—they have a saying that the Negro requires but three things; *pão, pão e pão*, which we may render in English by flogging, food and flannel. With the first he is most liberal, but equally sparing with the others.

To appear well in the eyes of the world, the Brazilian occasionally frees a slave, but only then when the poor fellow has become so old and decrepid that he cannot work, and when it would be a mercy to retain him; but the master thinks differently, he likes to see his name in the public papers as having "freed Manoel Benguella, who, it is hoped, will offer up his prayers to the Santissima Virgem for the health and prosperity of his late kind owner;" besides this, the *Senhor* saves himself the expense of feeding an useless hand. Such is the return for a life spent under forty or fifty years of hard labour.

Towards his wife, brothers and sisters the Brazilian is very formal, never addressing them, as we should, by their Christian name only, but he must give them some title. His wife is "*Senhora Donna*," his sister receives only the "*Donna*," and speaking to his brother, he says "*Senhor manno João*," (Mister brother John). His correspondence is equally ridiculous; he begins with "*Excellentissimo*," or, "*Illustrissimo Senhor, quem Deus guarde muitos annos*," (whom God preserve many years). The lowest beggar, if he be but a freeman, lays claim to the title of "*Senhor*," and it is absurd to see two of these rascals, hat in hand, talking together; one inquiring after his *filhada* (god-child) *Donna Floribella*, and the other after his *madrinha* (god-mother) *Senhora Donna Umbellina*.

The slave copies his master, often making abortive attempts at compliments to his fellow captive. Would that this were the only thing in which he copied his master; unfortunately the worst traits of the Brazilian's character take root soonest in the African's mind.

UNIVERSAL PROPERTY.

In princely halls and courts of kings
Its lustrous ray the diamond flings,
Yet few of those who see its beam,
Amid the torch-light, dazzling gleam,
As bright as though a meteor shone,
Can call the costly prize their own.

But gems of every form and hue
Are glittering here in morning dew,
Jewels that all alike may share
As freely as the common air:
No niggard hand, or jealous eye,
Protects them from the passer by.

Nature with a liberal hand
Flings wide her stores o'er sea and land,
If gold she gives, not single grains
Are scattered far across the plains;
But, lo! the desert streams are roll'd
O'er precious beds of virgin gold.
If flowers she offers, wreaths are given,
As countless as the stars of heaven;
Or music—'tis no feeble note
She bids along the valleys float;
Ten thousand nameless melodies
In one full chorus swell the breeze.—*Wild Carland.*

NEVER suffer a spirit of mockery to alloy the honesty of your conversation, for an outward smile and inward sneer are signs of a heartless breast. If you ever attempt to undermine the faith of others, either in the sincerity of human affection, or the eternity of divine love, the infidelity will surely recoil upon yourself in hours of bodily pain and mental anguish, when you would give worlds to realize the possession of present and eternal sympathy. It is true that you will find quizzing to be the conventional tone of an obtrusive section of society, but I am sure you will rarely, if ever, suffer the brilliancy of wit, if wit there be, to blind your better judgment. You will be more gratefully employed in fighting a good fight, for the sake of the defenceless, against unmanly taunts—against an ungenerous rallery, called forth, perhaps, by some personal peculiarity of the sufferer, which of itself engenders a morbid susceptibility to personal observations. In times of yore, a military enthusiasm called forth the courage of a physical chivalry to avenge the weak "when power dwelt amidst its passions." Where soldiers brought bone and sinew into play, let us put on the armour of mental fortitude, and become the champions of a moral chivalry, which shall blunt the weapons of infidelity, and heal the wounds of the poor in spirit.—*Manuscript Letters.*

THE purest motive of human action is the love of God. There may be motives stronger and more general, but none so pure. The religion, the virtue, which owes its birth in the soul to this motive, is always genuine religion; always true virtue. It reaches every action, it includes every duty. Religion may spring from various principles, begin in various motives. It is not for us to narrow the promises of God which belong to sincere religion, from whatever cause it originates. But of these principles, the purest, the surest, is the love of God, forasmuch as the religion which proceeds from it is sincere, constant, and universal. It will not, like fits of terror and alarm, (which yet we do not despise,) produce a temporary religion. It will not, like some other (and these also good and laudable principles of action, as far as they go) produce a partial religion. It is co-extensive with all our obligations. It is a guard against error in conduct, because it is a guard against these evil influences which mislead the understanding in moral questions. Cherish, confirm, strengthen the principle itself, and you will not want many lessons, you need not listen to any other monitor.—*PALEY.*